DOCUMENT RESUME

ED 146 567 CS 003 778

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TITLE Sex Differences in Reading Achievement. Reading Education Report No. 2.

INSTITUTION Bolt, Beranek and Newman, Inc., Cambridge, Mass.; Illinois Univ., Urbana. Center for the Study of Reading.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Oct 77
CONTRACT 400-76-0116
NOTE 30p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Elementary Education; *Literature Reviews; Performance Factors; *Reading Achievement; *Reading Instruction; *Reading Interests; *Reading Materials; Reading Research; *Sex Differences
IDENTIFIERS *Center for the Study of Reading (Illinois)

ABSTRACT

After reviewing the evidence that boys in American elementary schools are far more likely than girls to have serious reading problems, this report considers two lines of investigation into this discrepancy. The first line of investigation is based on the hypothesis that the predominance of female teachers in elementary schools is responsible for boys' poorer reading performances; the second is based on the hypothesis that the material children read in school is unappealing and that boys would read as well as girls if they were given more interesting material. The author concludes that, despite the plausibility of the hypothesis that boys might benefit from having male teachers, this assumption is not supported by the data. The research on high-interest reading materials, however, suggests that the content of what students read may have an impact on boys' reading performance. (AA)

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CENTER FOR THE STUDY OF READING

Reading Education Report No. 2

SEX DIFFERENCES IN READING ACHIEVEMENT

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October 1977

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The research reported herein was supported in part by the National Institute of Education under Contract No. US-NIE-C-400-76-0116 and in part by the Illinois Office of Education. This paper is a slightly revised version of a chapter to appear in Sex Equity in Illinois Schools, a publication of the Illinois Office of Education.

CS003778

Sex Differences In Reading Achievement

Boys in American elementary schools are far more likely than girls to have serious reading problems. In fact, surveys of remedial reading programs repeatedly indicate that boys are represented in numbers far greater than their proportion in school. In some districts, 90% of the remedial reading students are boys, and the average across districts appears to be about 70 - 75% (Blom, 1971). Achievement test data also reveal boys' greater difficulty with reading (Gates, 1961; Stroud & Lindquest, 1942). In the middle elementary school years, boys are about one-third to one-half grade equivalent years behind girls (e.g., Asher & Gottman, 1973).

The National Assessment of Educational Progress (1972) provides a picture of sex differences in reading across age. In 1971, a national sample of nine, thirteen, and seventeen year olds was tested along with a sample of adults (ages 26-35). Girls consistently outperformed boys on reading comprehension tasks such as identifying the significant facts and main ideas in passages. Only in the adult population did the sex difference disappear. A second survey taken in 1975 (NAEP, 1976) found quite similar results; nine, thirteen, and seventeen year olds were tested and at each age level sex differences were found.

Along with difficulties in reading, boys also experience a number of potentially related problems. Boys are more likely to be disruptive or aggressive in class (e.g., Peterson, 1961) and, on attitude surveys, they are found to be more negative toward school in general (Berk, Rose, & Stewart, 1970) and toward reading in particular (Neale, Gill, & Tismer, 1970). Even within a school year, the concomitants of poor reading performance are

evident. Boys who are poorer readers at the beginning of the school year appear more likely to show declines in self-concept and peer relations by the end of the year (Glick, 1972).

The high rate of early reading failure has long attracted the attention of American educators. Perhaps it is the incongruity of boys' early reading problems with their later career success that has made b[illegible]' difficulties with reading such an interesting area to study. Or perhaps the concern is an instance of subtle sexism in American education and educational research. Despite the fact that junior high and high school girls often have difficulties with mathematics (Maccoby and Jacklin, 1974), remedial mathematics is not stressed in the schools. Furthermore, it is only recently that educational researchers have begun systematic research on girls' problems in mathematics (Fennema, 1974; Fox, 1974).

Researchers interested in boys' reading problems have produced two lines of inquiry. From the mid-1960's to the 1970's there was considerable research directed toward the possibility that the predominance of female teachers in elementary schools was responsible for boys' poorer reading performance. Some researchers examined whether different reading achievement outcomes were associated with having a male or female teacher. Other investigators examined how male and female teachers interacted with children to learn whether boys tended to be treated differently by male and female teachers. Both types of studies were aimed at learning whether boys profit from having male teachers. Somewhat more recently, a different type of explanation of boys' poorer reading performance has been explored: Perhaps

the material children read in school is unappealing and boys would read as well as girls if they were given more interesting material to read. Some researchers interested in this hypothesis have done content analysis of the material children read in school. Other investigators have done experiments in which children are given high- and low-interest material, and comprehension of each type of material is directly compared. The evidence that has emerged from each of these lines of inquiry will be reviewed in this paper.

Sex of Teacher Hypothesis

One of the stable features of modern American elementary school life is the predominance of teachers who are female. In 1960, 85.8% of elementary teachers were female, and in 1970 the figure was 84.4% (NEA, 1970). The figures for the early elementary years are even more striking. About 98% of teachers in kindergarten through third grade are female (NEA, 1972). Furthermore, it doesn't appear that attempts to attract males to elementary school teaching have been very successful. At the University of Illinois in Urbana, for example, only 7% of undergraduates majoring in elementary education are male.

For a long time, American educators have been suggesting that the predominance of female teachers in elementary schools might be responsible for boys' early school failure. In 1909, L. P. Ayres of the Russell Sage Foundation wrote a book called Laggards in Our Schools. Ayres documented the tendency for boys to repeat early grades and suggested that the phenomenon could be attributed to the dominance of female teachers: "In the current discussion of what has been termed the feminization of our schools much has been

made of the alleged bad effects of too exclusively feminine instruction on the moral fiber and character of the boys but little evidence has been brought forward to substantiate these claims. Here we have indisputable evidence that there is more retardation among our boys than among our girls in the elementary schools" (Ayres, 1909; p. 157).

In 1964, Jerome Kagan of Harvard reported data that reawakened interest in the "sex-of-teacher" hypothesis. Second-grade children were found to sex-type school-related objects (e.g., blackboard, library) as feminine. Kagan suggested that children's view of school as feminine results in part from children's introduction to school by a teacher who is likely to be female and who is likely to approve of traditionally "feminine" behaviors such as obedience and decorum. Kagan also suggested that "the introduction of men into the primary grades, and an appreciation of the importance of creating a masculine atmosphere in the primary grades, may reduce the frequency of reading problems in young boys" (Kagan, 1964; p. 160).

More recent evidence has confirmed and extended Kagan's findings about children's perception of reading. Stein and Smithells (1969) found that second-, sixth-, and twelfth-grade children viewed reading, social studies, and art as feminine, and athletics, mechanical, and arithmetic areas as masculine. The tendency to view reading as a feminine activity actually increased over age. A study by Dwyer (1974) found that boys who sex-type reading as a feminine activity were less likely to be effective readers than boys who sex-type reading as masculine.

Data such as these are not surprising. There is a significant theme of anti-intellectualism in American life, and our culturally ideal male is

more likely to be associated with a six-shooter than a book. The traditional American father, until recently at least, is likely to encourage his son to go out and play ball rather than to spend his time "sitting around reading a book." The question is whether children's perception of reading as feminine is really attributable to any significant degree to the predominance of female elementary school teachers. Unfortunately, no data exist on boys' and girls' sex-typing of reading prior to and following their entry to school. Although the data on children's perceptions of reading and boys' poorer reading performance are open to alternative interpretations, many educators and researchers in the 1960's leaned toward the "sex-of-teacher" hypothesis.

In addition to data on boys' perception of reading as feminine, there are three other sources of evidence often cited as support for the sex-of-teacher explanation. One is cross-cultural data on sex differences in reading comprehension. Preston (1962) reported test data on a large sample of German and American fourth- and sixth-graders. He found that boys in the United States were poorer readers than girls, but that girls in Germany were poorer readers than boys. Preston tended to view his German data as the product of Germany's greater emphasis on learning and reading as part of the male role. He mentioned that most of the elementary school teachers in Germany were male, but he viewed this as an indication of the general cultural climate rather than as a causal factor per se. Nonetheless, the Preston data were interpreted by others as strong support for the view that the predominance of female elementary school teachers was responsible for

boys' poorer performance. For example, in an article entitled, "Are Our Schools Too Skirted?" the author cites the Preston study as indicating that the high percentage of female teachers in American elementary schools probably accounts for the higher rate of reading difficulties experienced by boys (Baldauf, 1973).

Cross-cultural data can provide a useful perspective, but the results should be interpreted with caution since many variables could account for differences obtained between nations. Johnson (1973) has recently reported data on reading comprehension in four countries. In the United States and Canada, boys were found to read more poorly than girls. On the other hand, in Nigeria and England the boys' scores were somewhat higher than the girls'. It is certainly of interest that the majority of teachers in Nigeria and England are male, and that the majority of teachers in Canada and the United States are female. But as Johnson notes, this is only one of the number of cultural variables that distinguish the countries studied.

Another source of evidence that later came to be viewed as support for the sex-of-teacher hypothesis was a study of the effects of programmed instruction on children's reading performance. McNeil (1964) found that kindergarten boys receiving computer-assisted instruction did as well as girls. One year later, when the children were in a regular first-grade classroom taught by a female teacher, the boys' reading performance was lower than the girls'. These data can be interpreted in various ways. Ingle and Gephart (1966) have pointed out that sex differences in reading often do not appear until after kindergarten. Perhaps a group of kindergarten children receiving traditional kindergarten instruction would have shown no sex

difference until first grade. Another possibility is that programmed instruction is particularly helpful in maintaining boys' attention. McNeil (1964) suggested this explanation of his data. Finally, there is the "sex-of-teacher" explanation, which McNeil also offered as a possibility. This is the interpretation that was favored by those discussing the study in the years that followed.

A final line of research that could be viewed as providing support for the sex-of-teacher hypothesis is research on female teachers' classroom behavior and values. Studies of female teachers have found that they tend to reinforce traditionally "feminine" behavior in boys as well as in girls (Fagot & Patterson, 1969); and they are more likely to reprimand boys than girls for disruptive behavior (Serbin, O'Leary, Kent, and Tonick, 1973). Feshbach (1969) has found that even student teachers seem to show a preference for behaviors which could be described as conforming and orderly as opposed to more nonconforming and untidy behavior. Here are two descriptions which Feshbach had 200 female elementary school prospective teachers read:

> Steve is working on a model for the space project. He decides to make a space capsule and works out a design for it. While he works he scatters glue, wood, and nails on the floor. When he can't find a piece of wood the right shape, he re-designs part of his model. When he catches his shirt on a nail, he pulls it loose carelessly. Although there is always a 10-minute clean-up period after a work project, Steve continues working on his model until the final bell rings.

> The children are learning how to handle and feed hamsters. The teacher asks David to help take them out of the cages for their food. Although David thinks it will be messy, he agrees to help. After putting on a lab coat, he gets some newspaper and covers the floor with it. He lines up the food dishes in front of the cages and carefully pours the food. He closes the food container tightly and returns it to the shelf. David follows the teacher's directions precisely in feeding each hamster.

The prospective teachers significantly preferred children like David to children like Steve.

An important question is whether data on female teachers' behavior and values are telling us about female teachers or about teachers in general. It could be that male teachers would subscribe to the same values and would behave similarly in the classroom. Schools have a life of their own apart from the gender of those who do the teaching. For one thing, the average class size is such that disruptive behaviors cannot be easily tolerated (Jackson, 1968). Academic behaviors such as reading require that the students be capable of extended periods of attention and reflection. Accordingly, male and female teachers might exhibit a similar style given the task of teaching reading to a group of 25 children.

The best way, of course, to learn whether male teachers would make a difference is to compare the results they achieve with those achieved by female teachers. In the late 1960's and early 1970's, a number of studies were conducted which made this comparison. The details of these studies have been presented recently in reviews by Brophy and Good (1974), Lahaderne (1976), and Vrough (1976). The typical comparative study has been conducted

at the fifth-grade level since this is the earliest grade at which a sufficient number of male teachers appear, and the typical finding in these studies has been that the gains made by boys and girls are unaffected by the sex of their teacher. For example, Asher and Gottman (1973) did two studies, one comparing 10 male with 10 female teachers and the other comparing 13 male with 13 female teachers. In both studies the gains made by boys and girls were the same regardless of whether children had a male or female teacher.

One very interesting secondary finding that has emerged from this research is that male teachers seem to have more able students assigned to their classrooms. Both Clapp (1967) and Asher and Gottman (1973) found that the pretest scores of children in male teachers' classrooms were higher than the scores of children in female teachers' classrooms. It is a surprising finding since male teachers might be expected to get the more disruptive, low-achieving students. Could it be that male teachers are being subtly rewarded for teaching elementary school or for taking the more difficult students by being assigned the more able students? Further research here is clearly needed.

The studies of achievement outcomes tend to suggest that male and female teachers produce similar results at least in the middle elementary school years. It could be inferred that male and female teachers have similar classroom styles. About eight studies have been done comparing the classroom interaction patterns of male and female teachers. Nearly all studies have been conducted in the middle or late elementary school grades and two findings have typically been obtained. First, it appears that male

and female teachers behave similarly toward boys and girls. Second, it seems that both male and female teachers are more aware of boys' presence in the classroom and give them more attention.

A study by Sikes, Brophy, and Good (1973) illustrates both of these findings. They used a rather sophisticated classroom observation scheme and found that, of 62 different measures, only one yielded evidence in support of the sex-of-teacher hypothesis. They did find, however, that in both male and female teachers' classrooms, boys initiated more questions and comments and received more positive interactions from the teacher. Interestingly, the boys also received more behavioral warnings and criticism and more negative "private" conversations initiated by the teacher.

The research on teacher interaction with boys and girls suggests that teachers believe that boys must be "kept in line" with the use of both frequent praise and frequent criticism. Since boys are more likely to pose classroom management problems, this response is understandable. An important question is whether the amount of teacher praise or criticism directed at boys exceeds that which would be predicted based on boys' behavior. A recent study by Etaugh and Harlow (1975) addressed this issue: They found that both male and female teachers scolded boys more than would be predicted based on the researcher's observations of the boys' behavior. Also, female teachers were found to praise boys more than would be predicted from the observation data on boys' behavior. This study was done with only two male and two female teachers, thus the results should be viewed with caution. They are suggestive, however, that the "keep boys in line"

strategy is operating in the classroom and results in disproportionate attention to boys.

One other study is of interest in the context of whether male or female teachers value the same type of student behavior. Recall that Feshbach (1976) found that female prospective teachers preferred students who were described as conforming and orderly to students who were described as nonconforming and untidy. Good and Grouws (1972) replicated this study with male as well as female trainees. They found that males and females valued the same type of student behavior. Surveying the research on the sex-of-teacher hypothesis, Brophy and Good (1973) recently exclaimed, "Of course the schools are feminine but let's stop blaming women for it." By this they meant that the schools value behaviors traditionally associated with the female role (e.g., conformity), but this value has more to do with the nature of schools than with the fact that teachers are usually female. In fact, they point out that "this passive school role that we now often refer to as 'feminine' was established when the schools were taught exclusively by males!" (Brophy & Good, 1973, p. 74).

To summarize, it appears that male and female teachers are associated with similar achievement outcomes, that their behavior toward boys and girls is quite similar, and that they share common values about appropriate classroom behavior. Despite the plausibility of the hypothesis that boys might benefit from having male teachers, it is not supported by the data. Confronted with these data, there are two ways to proceed. One approach is to test the sex-of-teacher hypothesis with younger children since nearly all of the research has been with middle elementary or secondary age children.

It could be argued that this is too late for male teachers to have much impact on the development of boys' reading skills. By the fifth grade, for example, most children have learned to read, and there may be little likelihood that teacher variables such as gender will contribute to achievement test scores. Furthermore, it is possible that sex differences in teacher style are less likely to appear in the later grades. Lee (1973) has suggested that the norms and institutional constraints of school (e.g., textbooks, curriculum) become more evident in the later grades leaving less room for variation in teacher style. Accordingly, Lee predicts that larger sex-of-teacher effects would appear at the earlier grades.

Lee's hypothesis is an intriguing one and can be tested when sufficient numbers of male teachers become available in the primary grades. My view is that the behavioral differences between male and female primary teachers will be found to be modest. The norms that guide teacher behavior are powerful even in the early grades. Furthermore, much of teacher behavior is a response to student behavior, not just a cause. Given that boys and girls behave differently, they will probably elicit different behavior from teachers regardless of whether the teacher is a male or a female.

We should have more male elementary school teachers just as we should have more female doctors. However, given the available evidence, it seems unlikely that improved reading will result from having more male teachers in the early elementary school grades. Instead of awaiting research on the effects of male teachers at younger grade levels, it would seem best to study manipulatable aspects of the classroom environment that might affect boys'

reading performance. One factor that might be important is the extent to which the environment involves boys in the reading task by engaging their interest. The next section reviews what is known about the effects of children's interest in the reading task and in the reading material on their reading performance.

The "Interestingness" Hypothesis

Even before serious reading instruction is introduced, teachers find that boys have more difficulty maintaining attention in school. For example, Werry and Quay (1971) had kindergarten, first, and second grade teachers fill out a behavior checklist for each of their children. At each grade level, boys were perceived as more distractable, hyperactive, and so on. For example, 55% of five year old boys and 30% of five year old girls were perceived as having a "short attention span." At eight years old, the respective figures were 41% and 24%. In response to the item "hyperactivity; always on the go", 38% of five year old boys and 19% of five year old girls were indicated. At eight years of age, the figures were 32% and 15%, respectively.

Boys also show up as more inattentive when direct classroom observations are made by outside observers. Samuels and Turnure (1974) observed four first grade classrooms during reading instruction. Each child was observed for hundreds of four-second intervals and, for each interval, a decision was made as to whether the child was attending or not. Attention was defined as such behaviors as orienting eyes to teacher or text, working on reading follow-up exercises, and observing the chalkboard or an overhead projection. Boys were found to be attending significantly less often than

girls using this procedure (76% versus 84%). Another interesting finding was that although boys did not differ from girls on reading readiness scores (presumably taken before first grade), they did differ on a reading achievement measure taken during the first grade year. Finally, there was a clear relationship between the children's rate of attention and their reading performance. Children were given a 45-word sight reading test and those children with high rates of attention during reading instruction proved to know far more of the words than children with low rates of attention (34 versus 16).

It could be inferred, then, that teaching procedures which maintain attention will have beneficial effects, particularly for boys. In this context, it may be worthwhile to take a second look at the McNeil (1964) study of programmed instruction. McNeil found that boys did as well as girls under programmed instruction in kindergarten but did worse than girls in a traditional first grade classroom taught by a female teacher. It may be that the programmed instruction was successful in maintaining students' attention. Each student sat in his or her own cubicle and received audio input via headphones. The child responded by pressing buttons and received individual feedback via green or red lights. This situation may be one that keeps children "on task." Interestingly, Atkinson (1968) has reported that boys and girls proceed at equal rates through a curriculum based on computer-assisted instruction.

There are, of course, other methods for maintaining attention besides programmed instruction or computer assisted instruction. One way is to make use of small group instruction with high-paced instruction and lots of attention-getting techniques. The Distar program (Engelmann and Associates,

1969) is an interesting one in this regard. Preliminary indications are that Distar produces beneficial results with low-income children (Becker & Engelmann, 1976). It would be of interest to evaluate the effectiveness of the program separately for boys and girls. Perhaps boys benefit even more than girls from this program, given its attention-getting appeal.

Another potentially powerful way to maintain student attention is to provide students with material that is interesting to read. Most teachers have observed that students will read material "above their level" if the material relates to the student's interests. Low-achieving high school students, for example, often will work hard when given a driver's rules-of-the-road manual to read. Unfortunately, much of the material that students read in school may be quite unrelated to their interests. Zimet (1972) and her colleagues have done extensive analysis of the content of children's reading primers and have concluded that much of it would have little appeal to children of either sex.

Because children's interests in reading material may affect their reading comprehension and their reading pleasure, considerable research has been done to assess children's interests. These surveys show that the typical third-grade boy is interested in certain topics while the typical third-grade girl is interested in other topics. Such surveys have limited usefulness for teachers. A survey taken in 1970 might not apply in 1980. More important is the fact that norms of children's interests hide the tremendous variability in children's interests. A teacher concerned with a specific student really has no basis for assuming that this child will fit the norm. If interest surveys have any role to play it is probably in providing textbook publishers with some broad guidelines. In the end,

the teacher and student must select something from a text, paperback book series, magazine, or newspaper that will be appropriate for that particular student.

A personal experience will hopefully serve to provide a picture of the extent to which children's reading interests are highly individualized. A couple of years ago, Louise Singleton, a doctoral student at the University of Illinois, Sally Shores, a fifth-grade teacher in Champaign, Illinois, and I developed a high-interest reading program which Sally Shores used in her classroom. Each student regularly selected books from the class library, school library, or public library. Children were divided into four six-person groups. Each group contained boys and girls and good and poor readers. Children read silently in these groups with a teacher or a teacher aide who also read a book. The children also met once a week in these groups for "book talks." These conversations served a number of purposes. First, they were intended to broaden children's interests and knowledge by exposing them to new topics. Second, they provided an opportunity to acquire and practice group discussion skills. Third, they reinforced children for reading by having them share their ideas and enthusiasm.

Despite the opportunities this program provided children to "advertise" the books they were reading, very few children read the same books. An analysis was made of how many different books were read during the school year and how many children read each book. Of 392 different books read by the class, 271 were read by only one child. Only 13 books were read by more than six children. These data provide powerful testimony to the individuality of children's reading interests.

A number of different methods have been used by teachers and researchers to learn about individual student's interests. One way is to observe the student's behavior in different situations. Another is to talk to the student or have the student respond to a structured interest inventory. Other ways include listening to students' conversations with one another or talking with a student's family or friends.

In our research (Asher & Markell, 1974), we use a picture rating technique to learn about each child's interests. Children are shown a series of twenty-five color photographs with each photograph corresponding to a single topic (e.g., basketball, forests, painting, cats, etc.). The children are shown each slide for about 10 seconds, and each child is asked to rate each slide on a 1-7 scale in terms of how intersting the picture is to them. With very young children a 1-3 scale could be used.

The slide rating method has a number of advantages. It is conducive to both group and individual administration, it can be used with children who do not know how to read or write, and it gives children who might not be able to spontaneously communicate their interests some specific objects or activities to respond to. The picture rating assessment can, of course, be followed up with discussion. It is often quite informative to learn why certain topics were highly rated by a child and others were not.

One thing about many children's interests, particularly young children's interests, is that they are fairly changeable. We have found that the test-retest correlation of children's interest ratings is high for some children and low for others. The average correlation over a four-month period (May to September) was .47 among a group of 44 fifth-graders we tested. The fact that children's interests change considerably suggests that the process of

assessing a student's interests should be a continual one. It would be a mistake to assess students' interests in the fall and build a year-long reading program around that assessment.

Despite the common belief that children read better on high-interest material, there have been surprisingly few empirical tests. The studies that have been done sometimes employ very few passages. Also, there has been a tendency to assume that certain passages are of interest to one sex and that other passages are of interest to the other sex. This is a hazardous assumption since, for example, not all boys like airplane stories and not all girls like stories about babies. Finally, many of the studies have examined the relationship of interest in a topic to comprehension of a topic by having children read a passage and then indicate how interested they were in the passage. This approach could produce spuriously positive findings since children might rate a passage as more interesting because they were able to understand it. It may be for these or other reasons that the few available studies yielded inconsistent results (e.g., Bernstein, 1955; Dorsel, 1975; Klein, 1959; Shnayer, 1967).

Our research on the effects of interest on reading comprehension (Asher, 1976; Asher, Hymel, and Wigfield, 1976; Asher & Markell, 1974) has used the slide rating technique to individually assess each child's interests. About one week after the interest assessment, each child is given six Brittanica Junior Encyclopedia (1970) passages to read. Three passages correspond in topic to the child's three highest-rated picture topics and these correspond to the child's three lowest-rated topics. Thus, each child receives an individualized set of high- and low-interest passages. For each passage, a comprehension measure is obtained.

In two of the studies done to date (Asher, 1976; Asher, Hymel, & Wigfield, 1976), the samples consisted of boys and girls who were performing at similar levels on the school-administered reading achievement test. In both of these studies, boys and girls were found to comprehend more of the high- than the low-interest material. A study more relevant to the present discussion was an earlier experiment (Asher & Markell, 1974) conducted with fifth-grade boys and girls who did differ on the school-administered standardized reading test. The question here was how well boys would do compared to girls on the low-interest versus high-interest material. The results were quite interesting. Boys performed as well as girls on the high-interest material, but performed significantly worse than the girls on the low-interest material. It seems, then, that the interest level of the reading material may be a particularly important contributor to boys' reading performance.

Two important questions remain to be answered. One is why children do better on high- than on low-interest material. The possibility suggested earlier is that interesting material maintains the reader's attention. This is a motivational interpretation of the interest effect. Another possibility is that children do better on the high-interest material because they are more knowledgeable about the content in areas in which they are interested. For example, a child interested in basketball would be likely to know much of the vocabulary relevant to the topic and would also have certain concepts or schema (e.g., knowledge of the game rules, history of the game, etc.) that would facilitate understanding the passage. Anderson,

Reynolds, Schallert, and Goetz (1976) have recently demonstrated that having relevant schema can aid comprehension of a passage.

The knowledge interpretation is an interesting one because it suggests that children's comprehension could be improved by teaching them more about certain topics. Studies of children's interests typically indicate that boys have more narrowly defined interests than girls (Markell & Asher, 1974; Norvell, 1958; Terman & Lima, 1925). For example, girls are often interested in traditionally "masculine" topics while boys are uninterested in traditionally "feminine" topics. This might mean that boys become knowledgeable about a narrower range of material. Ironically, the best strategy for improving children's reading comprehension may prove to be a strategy unrelated to teaching reading per se: namely, providing children with experiences that increase their knowledge of the world and the interesting things in it.

Another question that remains is whether high-interest reading programs have long-term beneficial effects. A number of reports have been made of high-interest reading programs (Daniels, 1971; Fader & McNeil, 1968; Gormli & Nittoli, 1971; Stanchfield, 1973). Each provides guidelines for setting up a high-interest reading program and two (Daniels, 1971; Fader & McNeil, 1968) even provide lists of paperback books that were used.

Unfortunately, for our purposes here, evaluations of the programs have not yet provided clear evidence on whether sex differences in achievement are reduced or eliminated. In two cases (Fader & McNeil, 1968; Gormli & Nittoli, 1971), the programs were designed for delinquent boys and no girls participated. In two other cases, (Daniels, 1971; Stanchfield, 1973), the use of high-interest material was one of a number of potentially important

program elements. Finally, evaluations of these programs have not involved the random assignment of children to high-interest versus regular programs making it hard to assess the meaning of gains made by children in high-interest programs.

Still, the evaluations made to date have yielded promising results. For example, in Gormli and Nittoli's (1971) summer high-interest reading program, boys gained more than one grade-equivalent score on three of four reading achievement subtests. Hopefully, data such as these will stimulate more attempts at implementing and evaluating high-interest programs. It appears that focusing on the content of what students read will have more impact on boys' reading performance than attending to whether their teachers are male or female.

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